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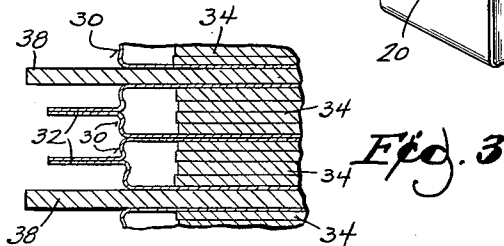
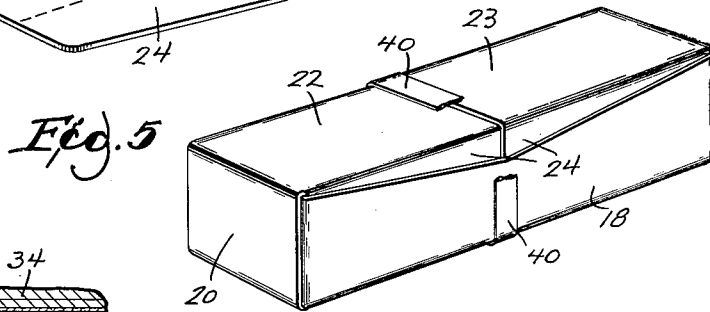
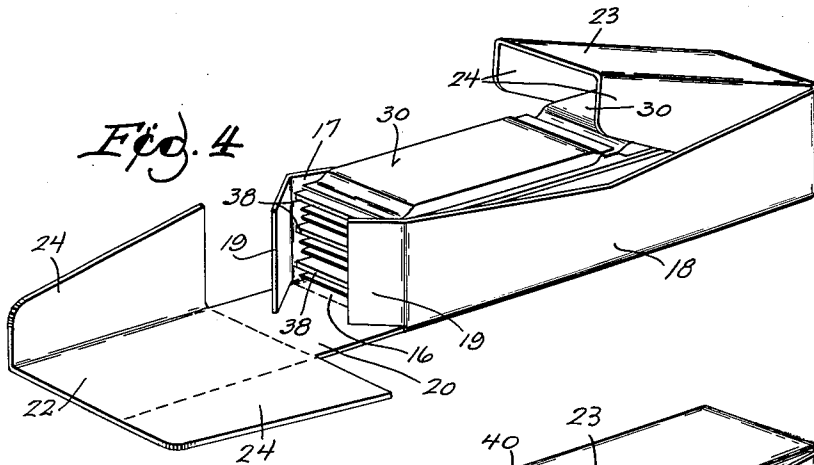
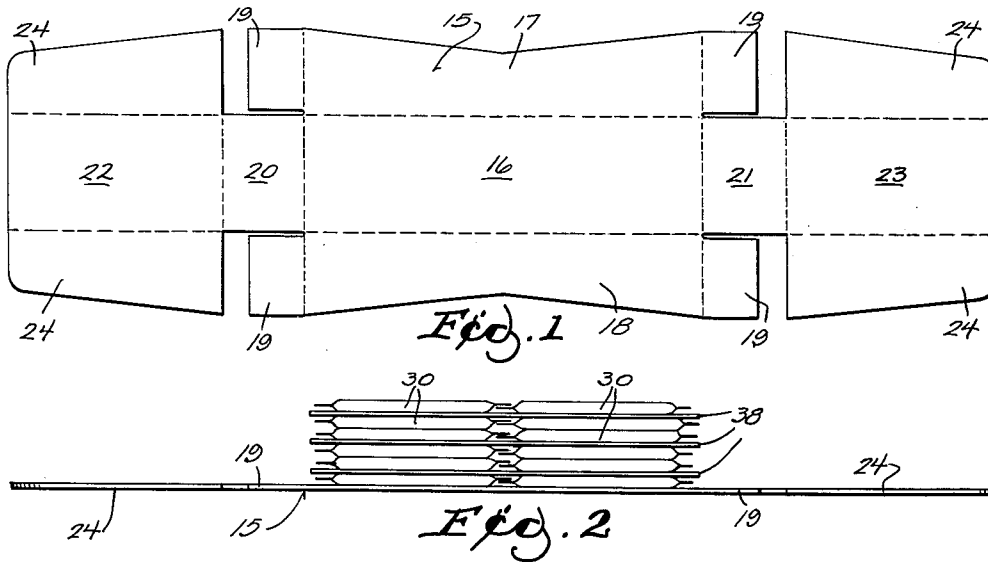
H. H. BECK ETAL

3,092,501

METHOD OF PACKAGING FOOD AND THE RESULTING PACKAGE

Filed May 4, 1959

2 Sheets-Sheet 1



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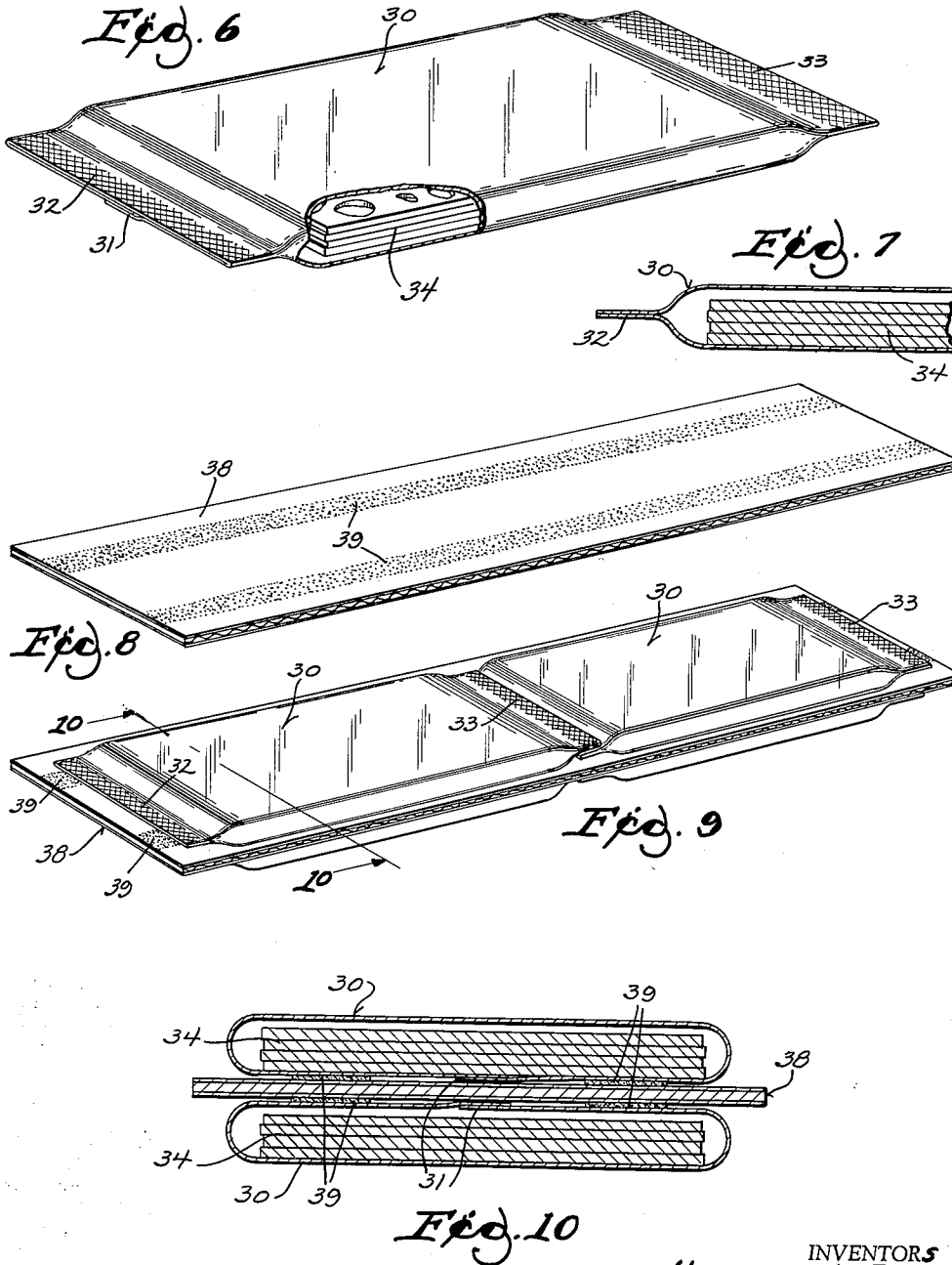
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METHOD OF PACKAGING FOOD AND THE RESULTING PACKAGE

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4 Claims. (Cl. 99—171)

This invention relates to the packaging of food products, such as cheese slices, in flexible envelopes to prevent damage to the envelopes or their contents during handling and shipping.

Packaging of food, such as sliced cheese in flexible gas-impervious and transparent envelopes or pouches made from synthetic resins containing a gas for inhibiting bacteria and mold growth, has been found generally satisfactory to the trade. However, sealing the extended flattened ends of the envelopes or pouches tends to make them brittle and when such packages are handled and shipped in paper boxes, it has been found that the plastic tends to crack and break the seal. The synthetic resin preferred because of its low permeability to gas, and particularly to oxygen, as well as to water vapor and the like, is a polymer and co-polymer of vinylidene chloride such as "Saran" and which may be used alone or laminated on another resin. However, "Saran" becomes brittle at temperatures below freezing and repeated flexure develops small holes, particularly alongside the longitudinal and end seals when the pouches are subjected to movement during handling at low temperatures.

Although the inside of a corrugated paper shipping container may appear smooth to the touch, the plastic envelopes in which cheese is packaged become abraded by movement within the box during the shipment. The scratching of the wrapping film reduces the acceptability of the wrapped cheese to the consumer. Also, the flattened ends of the cheese-containing pouches tend to become crumpled or curled and even the cheese itself may be squashed at the sides of the slices or may be curled. These factors also detract from the appearance of the pouch and definitely impair merchantability thereof.

Various efforts have been made to eliminate or limit such abrasion as by waxing the inside of the boxes, by folding the extended ends onto the faces of the envelopes, by wrapping several envelopes in a protective covering, or by fitting the packages tightly into the boxes. For a variety of reasons none of the suggestions have been entirely satisfactory or economical or adequate to present the sliced cheese in its original condition and in a package attractive to consumers.

The present invention provides a package for handling and shipping sliced cheese or other foods in transparent flexible envelopes or pouches and in which all movements of the pouches relative to the box or to each other are prevented so that the food slices and the pouches are both retained in the most attractive transparent condition of the pouches without folding or wrinkling thereof and without disturbing the original appearance of the sliced cheese. The box is unitary and may be of a special construction of the type known as a "wrap-around box." The preferred box, however, is of slightly greater length and width than the total length and width of an envelope, or such number of envelopes as is to be placed in a layer in the box. Sheets of paper board or fiber board are provided of a length and width to fit snugly into the box and thereby prevent endwise or lateral relative movement thereof relative to the box in the plane of the sheet and such sheets serve as dividers to which the filled envelopes or pouches are attached. The dividers carry a pressure sensitive adhesive in strips or dots or other pat-

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tern and which will adhere the envelopes to the dividers but will not peel off the divider and stick to the envelopes. While the adhesive must hold the pouches or envelopes securely to the dividing panels, it must be possible to attach and detach the pouches simply and quickly with a single movement of the hand. The bottom of the box may also be provided with adhesive for fixing the position of pouches resting on the box bottom.

The preferred form of the pouches is rectangular and the pouches have sealed ends extending beyond the ends of the food cheese slices contained therein. The preferred arrangement is to place the pouches end-to-end on each divider with the adjacent flattened ends of the pouches overlapping and the box is therefore relatively long and narrow. The box is, in effect, wrapped endwise around the stack of dividers and food-filled envelopes. The sides fold up first and the cover is divided transversely into halves each integral with an end of the box. Each side of the box has flaps folding over the ends of the stack of dividers and envelopes and the box top halves have flaps sliding inside the box when the top halves are brought into box closing position.

Initially the cheese-containing pouches are somewhat distended with carbon dioxide or other inert gas. However, some of the carbon dioxide is absorbed by the cheese which reduces the volume of the stack of dividers and envelopes and the amount of such shrinkage is difficult to predict. Both the box sides and the box top flaps are accordingly so cut that the central portion of the closed box is of less height than the ends and the top of the box can be brought down upon the stack of dividers and filled pouches to limit movement thereof up and down within the box.

The mode of packaging prevents abrasion and other mechanical damage to the pouches and their contents and also prevents flexure of the pouches which develops holes through which carbon dioxide may escape and oxygen and water vapor may enter.

In the drawings:

FIG. 1 is a layout of the unitary blank for the box or container;

FIG. 2 is a side elevation of a stack of the dividers and food filled packages in place on the box blank as one step of the method of packaging;

FIG. 3 is an enlarged fragment of two stacked dividers and the several pouches attached to each divider;

FIG. 4 is a perspective of a partially erected and filled box;

FIG. 5 is a perspective of a completely closed box;

FIG. 6 is a perspective of one of the food filled pouches, a portion of the pouch being broken away;

FIG. 7 is a fragment of a food filled pouch in longitudinal section;

FIG. 8 is a perspective of a divider with adhesive thereon;

FIG. 9 is a perspective of a divider with food filled packages in partially overlapping relation on both sides of the divider; and

FIG. 10 is a cross-section on the line 10—10 of FIG. 9.

The box or container 15 is cut as a unitary blank from paper board, corrugated paper board or fiber board in the shape shown in FIG. 1 in which panel 16 is the box bottom and panels 17, 18 are the box sides and in which each end of each of the side panels has a flap 19. The side flaps 19 are cut free from panels 20, 21 extending from the bottom and which will form the ends of the box and the flaps are of a size to fit inside the box ends 20, 21. Panels 22, 23 extend from the respective box end panels 20, 21 to form the two halves of a box cover and are of a length slightly overlapping centrally of the length of the box when closed. Each cover portion has two flaps 24 along two of its edges

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and which are of a size and shape to fit inside the box as will be more fully described. The bottom, end and top panels are in end-to-end relation and are of course of the same width. Lines are creased or scored between the bottom 16, the sides 17, 18 and the ends 20, 21 and between such ends and the cover halves 22, 23 for easy folding of the parts to make a substantially rectangular container and for folding of their respective flaps into the box when it is erected and closed.

Food filled pouches 30 (FIGS. 6, 7 and 9) are shown as substantially rectangular with one longitudinal seam 31 and with ends 32, 33 flattened and heat sealed after insertion of the sliced food 34 and injection of a gas to displace air in the pouch and to inhibit bacteria and mold growth. The envelopes or pouches are preferably made from a synthetic resin which is transparent, substantially gas-imperious and flexible and in which the longitudinal seam and end seals may be joined simply and in a gas tight manner as by the use of heat. Suitable materials are well known and need not be further described.

A number of dividers 38 are provided, these being of a size slightly longer and wider than the food filled pouches 30 placed thereon, whether the pouches are placed on the divider singly or in multiple, or slightly overlapping relation as shown. The divider panels are made from paper board or the like of sufficient stiffness to position all of the pouches 30 attached to one divider without marginal crumpling at the maximum lateral or endwise thrust produced by any handling to which the filled boxes will be subjected.

Each divider 38 has adhesive on one or both sides, the adhesive 39 preferably being pressure sensitive and applied in any pattern adequate to hold the pouches in place on the dividers. The adhesive is of a quality which will hold the filled pouches firmly in place both when in the box and when a divider and the pouches thereon are handled separately or set on edge for display purposes but which will not peel from the dividers or adhere to the pouches when the pouches are pulled free. The desired adhesive will anchor the envelope securely without requiring any effort on the part of the operator other than to press the envelope on the panel. The adhesive should also be of such a character that the envelope may be plucked from the divider panel without any particular effort on the part of the customer or the merchant. While it may sound as if the requirements were somewhat difficult of accomplishment, this is not the fact. Most pressure sensitive adhesives of the type used on cellulose tape are entirely acceptable for the purposes of the present invention and there is nothing critical about the degree of adhesion so long as the general requirements above outlined are met.

In use, the pouches 30 are substantially filled with food slices 34 of a size to leave some slack in the pouches transversely thereof and to terminate short of the ends of the pouches so that sealing of the pouch ends will not affect the ends of the stack of food slices. Before finally sealing a pouch, carbon dioxide or other inert gas is injected into the pouch in such manner as to flush out most of the air. When sealed the pouches are gas tight and retain gas at slightly super atmospheric pressure to distend the pouch. Pouches are then attached to the dividers 38 in the manner shown and a stack of dividers and pouches are placed on the bottom 16 of the blank. The box blank is now wrapped endwise about the stack, the box sides 17, 18 first being raised and their flaps 19 folded inwardly. The end panels 20 and 21 are now folded up to overlap the adjacent side flaps 19. The cover flaps 24 are folded down and cover 23 is now folded over the contents to bring its cover flaps 24 inside the box sides 17 and 18 (see FIG. 4) with the cover flaps adjacent the box sides. Similar folding of the cover portion 22 completely closes the box, preferably with the free ends of the cover portions

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in slightly lapping position. The cover portions are then pressed down on the contents of the box.

The cover portions 22, 23 may be held in place with adhesive coated tape 40 of a width to adhere to both of the cover portions and preferably extending around the girth of the box to hold the cover in pressure engagement with the box contents. The capacity of the cheese to absorb carbon dioxide varies considerably. Consequently, the volume shrinkage cannot be predicted with accuracy. The cutaway sides of the box permit the covers to be pressed down against the cheese at the center of the box with a given degree of compression.

Regardless of the extent of compression, the packages will not remain puffy, as any surplus of carbon dioxide will tend to be forced from the central portions of the pouch into the end portions thereof, adjacent the transverse seals. The attachment of the individual pouches to the divider panels protect these distended end portions of the pouches against deformation or mutilation during shipment.

We prefer to use carbon dioxide as the air displacing gas and in amount which will be nearly entirely absorbed by the cheese so that the pouches will not have an inflated or distended appearance under any normal conditions of handling the cheese. When the box is closed with pressure centrally across the box, the gas in the pouches is compressed toward the ends thereof adjacent the ends of the box and may be slightly compressed. Any inflated appearance of pouches due to such compression of the gas therein soon disappear as the gas is absorbed by the cheese. Because the pressure on the contents of a box may be varied without disturbing the appearance of the package or the major dimensions of the box which affect handling, shipping and storage, the present box is useful as a container for cheese under any conditions and protects the packages until they are removed from the box for display or sale.

We claim:

1. The method of packaging foods in flexible non-toxic gas containing envelopes stacked in boxes for shipment which method comprises adhesively attaching a substantial portion of the length of said envelopes to dividing panels projecting marginally beyond the envelopes, stacking the dividing panels and adhesively attached envelopes, enclosing the stacks in a box engaged by margins of the dividing panels stacked therein, and closing the box with pressure centrally across the box to position and confine the envelopes against displacement in the box during shipment and to force the gas from the central portions of the envelopes to the end portions.

2. The method of packaging foods comprising the steps of enclosing food in flexible envelopes, injecting non-toxic gas into said envelopes, sealing said envelopes applying pressure sensitive adhesive to dividing panels, pressing the envelopes onto the dividing panels, said dividers projecting marginally beyond the envelopes, the respective envelopes being readily removable from respective dividing panels by pulling individual envelopes from the dividing panels to which they have been attached without disturbing the original appearance of the envelope, stacking the envelopes and dividing panels in a box engaged by margins of the dividing panels stacked therein, and closing the box with pressure centrally across the box in order to position and confine the envelopes against displacement in the box during shipment and to force the gas from the central portions of the envelopes to the end portions.

3. A food package which comprises a box having sides of greater height at its ends than centrally thereof, said box having a cover portion divided into two portions with flaps essentially inside of and adjacent to the box sides, the cover flaps being of diminishing width from the box ends toward an end of the cover portions, a plurality of flattened dividing panels of a length and width closely fitting into said box and having food

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pouches of less width and length than said dividing panels and adherent thereto and held by said dividing panels free of contact with sides and ends of said box, said dividing panels and pouches being superimposed in a stack, and means connecting the box covered portions to said box in pressure engagement centrally with said stack.

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4. The package of claim 3 in which the box sides are of diminishing height from the ends thereof inwardly toward the center thereof and to edges of each of the cover portions have a flap diminishing in width from the ends of the box toward the free ends of the cover portions for co-action with the diminishing height sides of the box to provide for bearing of the free ends of the

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cover portions on the stack of dividing panels and pouches in the box centrally and across the stack.

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